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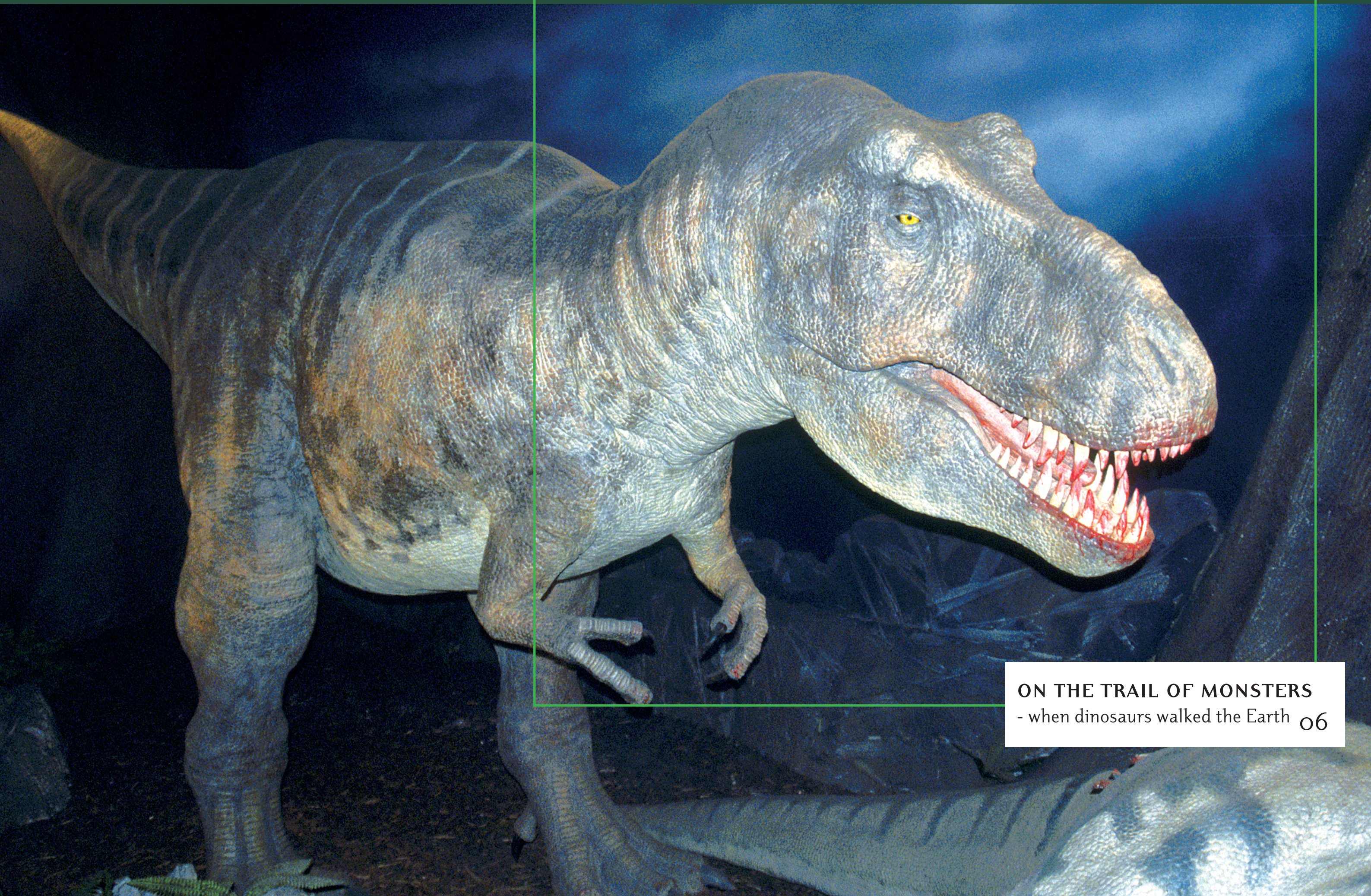
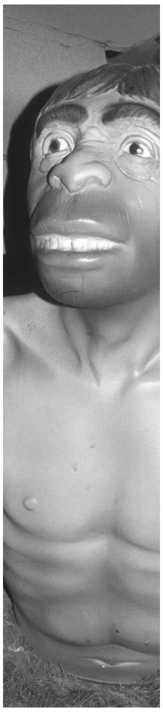


ON THE TRAIL OF MONSTERS
- when dinosaurs walked the Earth 06

EDITORIAL

When is a scientist not a scientist?



The answer, according to Richard Dawkins, is when the scientist is a creationist. Dawkins, of course, is Professor of the Public Understanding of Science at Oxford University and an arch opponent of religion (in general) and creationism (in particular). In the aftermath of last year's controversy about whether creation should be taught in Britain's schools, Professor Dawkins was interviewed on the BBC Radio Four programme, 'The Long View' (broadcast 8th April 2002). In the course of the interview, he said this:

> "There are no reputable scientists who believe in creationism – that's one of the myths that creationists put about."

Definitions are all important and so, intrigued by the Professor's comment, I wrote to him to ask how he would define a 'reputable scientist'. The only definition that he was able to offer me was essentially a negative one: a reputable scientist is one who does NOT believe in young age creation. It is tautologous, then, for Professor Dawkins to claim that there are no reputable scientists who believe in young age creation – his definition makes this a 'self-fulfilling prophecy'!

This is the same Professor Dawkins, remember, who last year called upon the Government to prevent alternatives to Darwinian evolution from being presented in the science classroom. In his sights, of course, was Emmanuel College in Gateshead, a city technology college partly funded by Christian businessman Sir Peter Vardy. In view of Professor Dawkins' enmity towards such schools, we can't help wondering what he makes of the excellent results reported from Emmanuel this academic year. According to *The Times* (22nd August 2003, p.14), the school's 186 students recorded a 95.8% success rate for achievement in five or more GCSEs at grade C or better. Three of the students at Emmanuel were rewarded with a full set of A* grades. The principal of Emmanuel College, Nigel McQuoid, was reported as saying: "Whilst every comprehensive has its fair share of very bright children, to have 27 in one year who are capable of exceeding ten A* and A grades each is a stunning record for us."

On behalf of the Biblical Creation Society, we would like to congratulate the staff and pupils of Emmanuel College for this tremendous achievement.

Coming soon...

The planet Mars has been prominent in the night sky recently. On August 27th 2003, the Red Planet was only 55.8 million kilometres from the Earth – in conventional terms "closer than at any time during the past 60,000 years".[1] Dozens of all-night observing events were held across the country. Robin Scagell, organiser of National Astronomy Week, described the close pass of Mars as "the biggest thing to happen in British astronomy since the eclipse". Sadly, cloudy skies spoilt the spectacle for many people, but for those fortunate enough to catch a glimpse it was a memorable experience. I had the opportunity to observe Mars early in September using a 9" reflector telescope, and can vouch for the excitement of seeing the Red Planet as I'd never seen it before!

It seems that there is considerable interest in such things among our readers, some of whom have asked for more coverage of astronomy in the magazine. To this end, we are planning a special theme issue on the solar system for the near future. So keep sky-gazing – and reading *Origins*!

PAUL GARNER

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[1] The figure of 60,000 years ago is estimated by simply extrapolating today's planetary motions back that far. But this assumes (a) that there have been no perturbations of these motions in the past, and (b) that the Earth and Mars actually existed as long ago as 60,000 years. According to the biblical time scale, this second assumption is incorrect.

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Three ancient human skulls from Africa hit the headlines in June 2003. Predictably, the media presented these finds as more evidence confirming evolution. However, Dr David Tyler cuts through the 'spin' to find out the real story behind these skulls and how they fit into biblical history.

04

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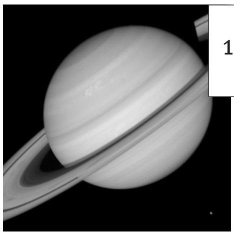
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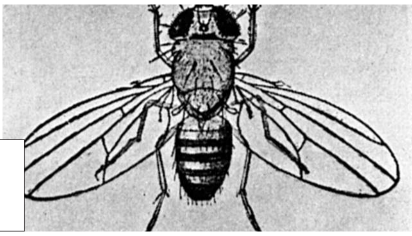
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When a major popular science journal devotes a lengthy article to attacking creationists, you know that the evolutionists are worried! Dr John Peet examines the latest offensive from *Scientific American* and responds point-by-point.

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The foundations of our faith

2. THE DOCTRINE OF SCRIPTURE

J H John Peet

THE BIBLE IS GOD'S TESTIMONY ON ALL MATTERS AND THAT INCLUDES CREATION. HIS IS THE ONLY EYE-WITNESS ACCOUNT. CAN WE TRUST IT? IF WE CANNOT TRUST WHAT MUST BE UNIQUELY GOD'S TESTIMONY IN THE OPENING CHAPTERS OF GENESIS, WHERE DOES THAT LEAVE US WITH THE REST OF SCRIPTURE?

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It is a basic tenet of evangelical theology that the Bible is **inerrant**. The Creation message underlies much of the Scriptures and so their reliability on this issue is critical. Right through to the final book of the Bible, Creation is a fundamental truth. In heaven itself, God is praised as Creator (Revelation 4:11). In between, we have the testimonies of the Psalmist and Isaiah, for example. The apostles found their teachings on this divine action. The Lord Jesus also quoted from this portion of Scripture to establish fundamental truths.

IF WE CANNOT TRUST WHAT MUST BE UNIQUELY GOD'S TESTIMONY IN THE OPENING CHAPTERS OF GENESIS, WHERE DOES THAT LEAVE US WITH THE REST OF SCRIPTURE?

The rejection of biblical creation has led to evangelical dispute on this issue of the trustworthiness of Scripture. There has been a trend to distinguish between the infallibility of Scripture (true in matters of faith) and the inerrancy principle (true in matters of fact). This is an artificial distinction but necessary if we cannot rely on the Bible for matters of fact.

Having surrendered on this issue of origins, it has led to a general weakening on the authority of Scripture on other issues. If we can rewrite Genesis 1-11, we can do the same elsewhere when it suits us. For example, if we can reinterpret the plain meaning of these chapters, then we can reinterpret the Bible references on homosexuality. What can we trust in Scripture if we cannot trust those items which can only be revealed by God's testimony?

Following on from this first principle, we note that the Genesis account is **historical**. This is the natural reading of the passage. Why should anyone wish to understand this record as anything but history? A number of alternative scenarios have been proposed for this part of Scripture. Typically, it has been proposed that it is myth, poetry, parable, drama, etc. Clearly it is not unambiguously any of these or there would be no debate. This is very significant because the nature of these Hebrew literary forms is well recognised. Rather, this section of Scripture is plainly historical because it is the intention of the writer that it should be understood as historical. This is recognised by biblical scholars of a wide range of theological persuasions and is only challenged by those who are uncomfortable with its implications. If God didn't mean the account to be read this way, why didn't He say what He meant us to understand? The onus is on the critic to demonstrate that we are looking at something that is other than historical.

The historical nature of the account is underlined by its impact on other Old Testament writers and New Testament ones too. Each chapter of Genesis 1-11, except possibly chapter 8, is referred to in the New Testament. They contain serious information on nations and family history. The genealogies are real, otherwise there is little point to their inclusion. The reality of Adam is underlined by the New Testament parallel to the last Adam; 1 Corinthians 15:45 loses its force if Adam is a Neolithic conversion of a hominid into a true human, as has been proposed by some theistic evolutionists.

THE TRADITIONAL EVANGELICAL POSITION OF AUTHORITY, 'THE BIBLE SAYS', HAS BEEN REPLACED BY 'SCIENCE SAYS'.

The structure of these passages is the same as that in the 'historical books'. The latter introduce accounts with the structure, '**In the days of X...**' and then follow with a chronological account of events. That is exactly the format we have here.

Further, the biblical record is consistent with the findings on Earth history. In contrast, we believe that evolution distorts Earth history. The biblical record is consistent with scientific findings. For example, consider the contrasting accounts of mankind and his cultural development. The Creation account indicates that man has always been intelligent. Evolution history claims that his cultural development has depended on man's developing intelligence. As Richard Rudgley, an evolutionary anthropologist, stated in a Channel 4 TV series on Stone Age man about three years ago, 'Stone Age man was as intelligent as we are.'[1]

A further maxim of the evangelical position is that the Bible is our **supreme authority**. The Reformation enunciated the principle *Sola Scriptura*.[2] Where is our authority? The traditional evangelical position of authority, 'the Bible says', has been replaced by 'science says'. Now, we're told, our interpretation of Scripture must be subjected to the ideas of scientists. But 'science' is not an independent authority. It is actually only 'what scientists say' and they are not infallible authorities, so don't be intimidated by scientific opinion. Science is not all-knowing; there are realms that science cannot explore (e.g. the spirit).

A few years ago, the *Times Educational Supplement* reported on a survey of university biology students and their attitudes to evolution. The researcher was surprised at the number of such students who apparently rejected the evolutionary approach to the origin of life. He concluded, 'However, most rejectors did so on the basis of religious belief: this is hardly compatible with the open-mindedness expected of a prospective scientist.' Yet we are often told that the acceptance of evolution is not thought to be a consequence of a philosophical belief. Note the assumption of the superiority of science as a form of knowledge. But who said so? Who endowed it with this authority?

Are the Scriptures to be subject to fallible human interpretation? The doctrine of 'total (or radical) depravity' declares that every part of man has been affected by the Fall (Genesis 3) and that includes the mind and our reasoning ability. Satan has blinded our eyes. But, the Holy Spirit is our interpreter. Nature leads us to recognise a Creator (as in Romans 1:20), but we can only know about Him if He tells us. We cannot comprehend the incomprehensible. Job 28:1-11 celebrates man's ability to know things, but v.12-28 tells of his inability to discern wisdom: 'The fear of the Lord is the beginning of wisdom.' In contrast, scientific thinking is considered by most to be naturalistic – by definition! (That is, it is a mechanistic approach to the explanation of our observations, excluding the involvement of an intelligent being, especially God, since He cannot be monitored by scientific methodology). As one writer put it very effectively, 'Secular thinking is possible, but ultimately is decontextualised, because it is ignorant of our triune Creator.'[3]

It is significant that in this account we find the first record of doubt being cast on the reliability of the Word of God (Genesis 3:1): 'Did God *really* say?'. Does the Bible *really* say, 'In six days the LORD created the heavens and the Earth' (Exodus 20:11; Genesis 2:2)? Does the Bible *really* say that God told Adam, because of his sin, 'from dust you came and to dust you will return' (Genesis 3:19)? Does the Bible *really* say that Christ died for our sins (1 Corinthians 15:3)? Does the Bible *really* say that thorns and thistles are part of the curse of God on the Earth for man's sin (Genesis 3:17-18)? Does the Bible *really* say that the deluge covered the whole Earth and destroyed all air-breathing land animals (Genesis 7:19-23)? Does the Bible *really* say that, 'As it was in the days of Noah, so shall it be when the Son of Man returns' (Matthew 24:37)?

If the Scriptures are not reliable in the account of the Creation, Fall, and Flood, when and where can we trust them? The Lord Himself gives an important principle in John 5:45-47: 'If you do not believe what [Moses] wrote, how are you going to believe what I say?'

NOTES

[1] *See Rudgley, R. (1999). Lost civilisations of the Stone Age. Arrow Books, London.*

[2] *Duce, P. (2001).* Sola Scriptura *and science. Origins, (32): 10-13.*

[3] *Ovey, M. (2000). Cambridge Papers, 9(1):2.*

Tracking dinosaurs in Britain

DAVID TYLER

THERE'S SOMETHING EXHILARATING ABOUT DISCOVERING A DINOSAUR TRACK. FOR ME, IT IS A THRILL TO TOUCH THE SPOT WHERE, ONE DAY IN THE PAST, A HUGE BEAST ACTUALLY WALKED! TRACKS AND TRAILS BRING GEOLOGY TO LIFE! SEVERAL PLACES IN BRITAIN YIELD DINOSAUR TRACKS, ALTHOUGH SEEING GOOD QUALITY SPECIMENS IS NOT AT ALL EASY.

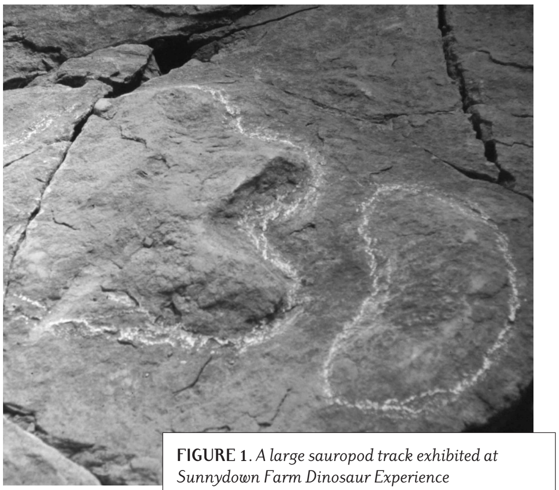


FIGURE 1. *A large sauropod track exhibited at Sunnydown Farm Dinosaur Experience*

The Isle of Purbeck in Dorset is a good place to start, toward the eastern end of our new 'World Heritage Site'. In the classic sequence of rocks at Durlston Bay, the cliff face cuts through the beds where trackways have been found.

The best examples, however, have been exposed inland, by quarrying. Those found in 1986 at Sunnydown Farm, near Langton Matravers, have been put on public display. There are at least four trackways, with possible trackmakers being *Diplodocus*, *Iguanodon* and *Megalosaurus*.

Durlston Bay exposes a very interesting series of rocks. At the western end of the bay, the lowermost rocks are made of limestone, full of marine fossils. Above these are a series of beds, some with marine fossils, some with freshwater fossils. There is an important horizon called the '**Mammal Bed**': in the past, the bones of some small rodent-like animals were found here. The dinosaur tracks are found in association with the lowest of the freshwater beds. The tracks from Sunnydown Farm are from the 'Cherty Freshwater Member', with water snails and the remains of insects, lizards and crocodile teeth. Resting on these rocks is the '**Cinder Bed**': a remarkable deposit nearly three metres thick composed mainly of billions of oyster shells. Above this are more strata and it is from these that most of the other reports of dinosaur trackways come. The majority are found in one specific horizon in these '**Intermarine Beds**' (so-called because the sediments appear to be associated with brackish, rather than marine or fresh, water).

Another popular place to hunt for dinosaur trackways is along the Yorkshire Coast. The sequence of rocks here has non-marine rocks sandwiched between marine deposits. The environment in which these rocks were laid down is inferred from the fossils enclosed in the rocks and also from clues found in the sediments. So, for example, the non-marine section has plant remains (some in the positions in which they grew) and no marine fossils. It has also the famous 'Meander belt', complete with all the structures associated with meandering rivers. Dinosaur trackways occur throughout these non-marine rocks. For years, observations were limited to the occasional distinct trackway or individual track impression. More recently, geologists have recognised that some beds have been trampled so thoroughly by dinosaurs that the sediments are churned up. This has been called 'dinoturbation', a word that means 'a trampling and disturbance of soils and substrates by dinosaurs'. Several types of dinosaur track have been described, linked to both herbivores and carnivores, from turkey-size to giants. Recent work has linked some new traces with the foot bones of a stegosaur. Although links to specific species cannot be made, this area reveals "a minimum of four bipedal dinosaurs [...], two theropods and two ornithopods, each type being represented by large and small forms." (Romano and Whyte, 2003, p.210).

SEVERAL TYPES OF DINOSAUR TRACK HAVE BEEN DESCRIBED, LINKED TO BOTH HERBIVORES AND CARNIVORES, FROM TURKEY-SIZE TO GIANTS.

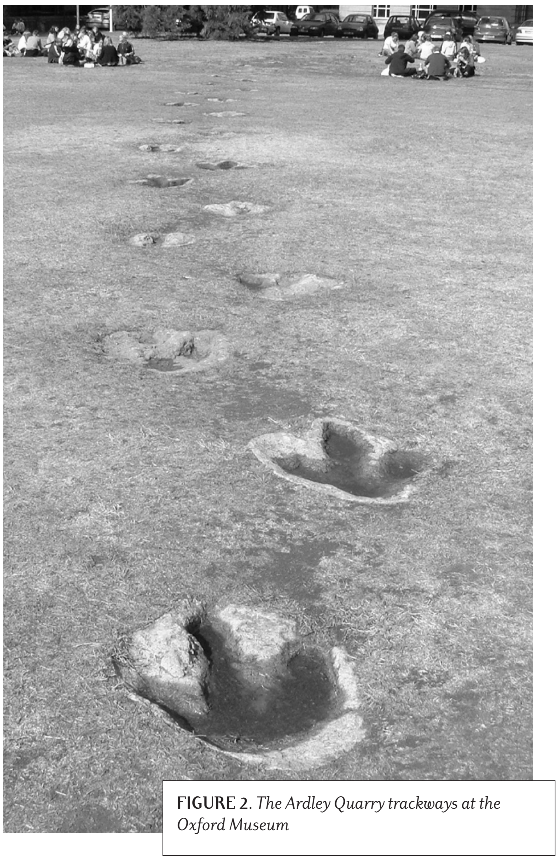


FIGURE 2. *The Ardley Quarry trackways at the Oxford Museum*

Quarrying work in Oxfordshire has revealed the most spectacular British trackways. These have been the subject of scholarly papers in *Nature* and *Science* as well as receiving good press coverage. Some 30-40 trackways extend up to 180 metres. All of the trackways point to the northeast and are roughly parallel to each other. They are mostly from herbivores and are all on the same bedding plane. The suggestion has been made that the assemblage represents one herd moving across soft sediment. There are also distinct three-toed carnivore tracks, possibly *Megalosaurus*. At one point, one set of these tracks changes from walking to running, with the stride length doubling from three metres to six metres. It has been easy to speculate about the giant predator accelerating to attack a lumbering herbivore! A 60-metre-long reconstruction of the *Megalosaurus* trackway is installed on the lawn in front of the Oxford Museum.

The National Museum of Wales preserves a set of dinosaur tracks extracted locally. This again shows linear trackways preserved after the animals walked over soft sediment. Other British localities where dinosaur trackways have been found are noted by Garton (1996).

Most recently, in 2002, new trackways were reported on the Isle of Skye in NW Scotland. After a loose slab with a dinosaur track was discovered by a local resident, geologists got to work investigating the area. Trackways were found, again thought to be made by *Megalosaurus*.

WHAT CAN WE LEARN FROM THESE DINOSAUR TRACK DISCOVERIES? HOW DO THEY RELATE TO OUR UNDERSTANDING OF ORIGINS AND EARTH HISTORY? IS THIS AN AREA WHERE BIBLICALLY-BASED SCIENCE HAS DISTINCTIVE INSIGHTS?

Trackways are remarkable because it is rare today to find conditions suitable for preserving tracks. Making tracks is easy, **but preserving them is a challenge!** Not only must the tracks be covered quickly by other sediments, there must also be an absence of burrowing animals that would otherwise produce internal mixing. The sediments need to harden rapidly in order to preserve trackway details. These conditions were clearly not unusual in the time of the dinosaurs, but they are today. This point is not fully appreciated by most geologists. The authors of one study of the Ardley trackways wrote: *"The footprints are consistently well preserved and do not show overprinting or erosion. They are preserved on a single bedding plane that was probably exposed for a few hours between two high tides."* (Day *et al*, 2002). This sounds as though it were an everyday occurrence, but the real probability of preserving trackways on a bedding plane extending at least 180 metres between two of today's high tides must be essentially zero.

FIGURE 3. *The original find of a dinosaur track on Skye*

The starting point for a biblical answer is given by Garton in a previous issue of *Origins* (1991). He argues that the global Flood in Genesis 6-8 must relate to the pattern of tracks left by air-breathing animals. Although air-breathers might be deemed to survive a short while into the Flood, they must have died by day 40 (Genesis 7:17-23). Then, no more air-breathing animals walked this Earth until after the few survivors left the ark.

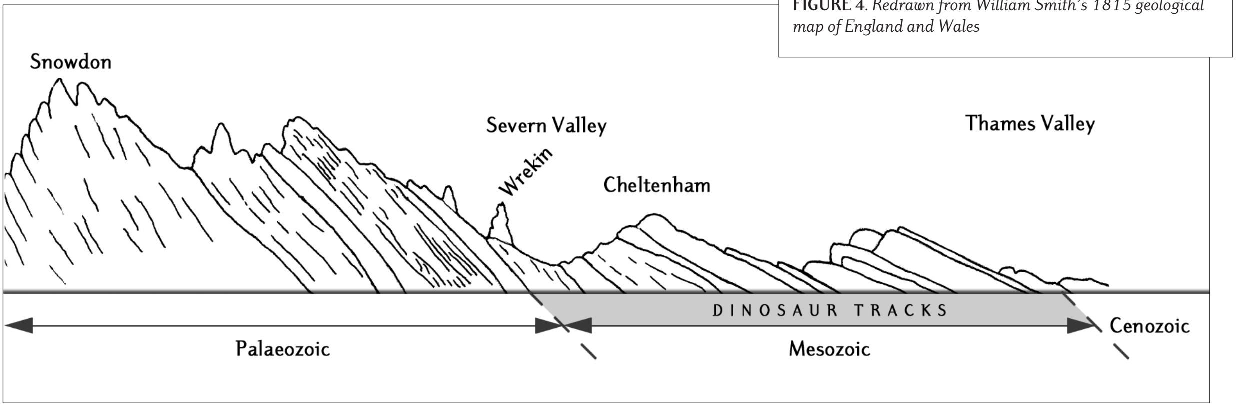
Consequently, if these trackways have anything to do with Noah's Flood, they either represent early-stage Flood deposits or they represent recolonisation after the Flood. The dinosaurs were either trying to escape being drowned or they were seeking to occupy new territory as they spread out from the ark's landing site.

In a recent issue of *Creation*, Oard (2003) has referred to the Ardley Quarry trackways and has located them in the early stages of the Flood (although in his case, 150 days rather than 40 days is considered the maximum time for air-breathing animals to perish). However, the relevant data that allows us to distinguish between the early-stage Flood and recolonisation interpretations are not presented or discussed.

If the dinosaurs were escaping Flood waters, then *above* the strata carrying the tracks, we should find strata with no tracks of air breathing animals. Below the strata, we should expect to find signs of the pre-Flood Earth being overwhelmed by flood-waters. This would then be the 'signature' identifying the first 40 days of the Flood. The signature would be: pre-Flood sediments or rocks, tracks of animals seeking to escape, strata without evidences of living air-breathing animals, and then more strata where the tracks reappeared (marking the recolonisation phase after the Flood). However, there are major problems trying to identify such a sequence. There is no pre-Flood surface below the dinosaur tracks and no sequence above them that is barren of tracks of air-breathers. In many parts of the world, above the dinosaur tracks we find bird tracks and mammal tracks. This is a highly significant finding that points us clearly towards the recolonisation interpretation.

British geology confirms that rocks carrying dinosaur tracks are not early-stage Flood deposits. Consider Figure 3, which is redrawn from a cross-section of strata from the Welsh mountains (on the left) to London (on the right) dating back to 1815. The original section was produced by William Smith, known as the *'Father of Stratigraphy'*. During his working life, he became acquainted with all the major rocks of England and Wales and as a result he was able to produce the first comprehensive geological map. Obviously, geologists today are able to do a far better job and to capture many more details. However, Smith's work is used here for the sake of sceptics. He did

FIGURE 4. *Redrawn from William Smith's 1815 geological map of England and Wales*



not come to the field with a theory about what he would find. Smith was a man who stuck to recording what he found in the field.

The successive horizons listed represent those rocks that can be seen by travelling from the mountains of North Wales to the low ground around London. It is our 'local stratigraphic column'. It contains a great diversity of rock types: sandstones, siltstones, mudstones, limestones, chalk and, in the lower parts, metamorphosed sediments. There is also a great diversity of fossils in the rocks. The horizons at the same level as our dinosaur trackways are marked. Clearly, in this sequence, they are nearer to the top than to the base. There is no pre-Flood land surface. Furthermore, there is an absence of air-breathing animals leaving tracks in the strata below the dinosaurs. If the dinosaurs were trying to escape being drowned, what were they doing whilst all the lower-level strata were deposited? There was no high ground for them to occupy.

FIGURE 5. *Exposing the Skye trackway for a photoshoot*

In the British section above, there are no reports of trackways of air-breathing animals in the strata above the dinosaur trackways. However, we need to point out also that these rocks do not have any signs of shorelines or mud-flats. There are no horizons where trackways could be preserved. In other parts of the world, a different story can be told. In the strata above the dinosaur tracks are surfaces with bird tracks and mammal tracks. An overview of this data is in Garton (1996).

My analysis (Tyler, 1994) of rocks of the Yorkshire Coast considered the sedimentary structures and the enclosed fossils, and concluded that they are not Flood rocks but are best understood as representing short-lived environments in an unstable post-Flood period. Since dinosaur trackways are present in considerable numbers, the further conclusion is that recolonisation from the ark was under way when those rocks were being deposited.

The first conclusion, then, to be drawn from this enquiry into dinosaur tracks is that the dinosaurs were pioneer recolonisers of the Earth after the Flood. They lived in a world full of natural dangers, where destructive local floods and other disasters were ever-present. Their world was unstable, as the Earth recovered from the global Deluge.

System	Associated meaning	
Cenozoic	new life	Top
Mesozoic	middle life	↑
Palaeozoic	ancient life	*Superimposed strata*
Precambrian	basement rocks (no body fossils)	

Overview of terms descriptive of rock sequences and their fossil content

The terminology above emerged early in the history of geology. These words appeared in Lyell's *Principles of Geology*, dated 1831, and the sequence works well in the British 'local column'. It can be checked fairly easily by doing some field geology. In Figure 4, the high ground to the north-west is designated Palaeozoic, the middle part (including the Vale of Severn) is Mesozoic, and the south-eastern stretch is Cenozoic. It is worthy of note that all the British dinosaur localities (including Dorset, Oxfordshire, Yorkshire coast, South Wales and Skye) are Mesozoic.

The Skye finds are noteworthy. Only a small part of the island belongs to the Mesozoic system, and it was in this little area that the tracks were found – by a non-geologist. The particular stratum was Mesozoic *before* the tracks were discovered; it was not designated Mesozoic because of the trackways.

Whilst some Diluvialists have questioned the validity of this ordering of the geological strata, it has been repeatedly validated in Britain (and elsewhere in the world). It is not a myth, a uniformitarian invention or an evolutionary falsehood. Anyone who is prepared to look at the field data can personally confirm the basic structure of British rocks.

Biblically, we are not told that all fossils were laid down in the Flood, nor that all strata of any thickness must necessarily have been formed in the global Deluge. These are not positions on which we need to take a biblical stand. However, it is a matter of biblical revelation that the Flood destroyed all air-breathing life save that on the ark. This biblical fact can and should inform our interpretation of the fossil record, particularly in the case of the tracks of dinosaurs, birds and mammals (which were all air-breathers). This article has sought to do this in the context of the British trackway data, and to draw conclusions of relevance to some current debates among creationists. Earlier articles in *Origins* that are directly relevant to this theme, but relating to the geology of Spain, are by Garton (1997, 1998).

The author would like to thank those who contributed the images of the Skye and Oxford tracks.

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THE 8TH EUROPEAN CREATIONIST CONGRESS: A REPORT

Sheena Tyler

IT SEEMS THAT WE'RE NOT 99% the same as apes after all! And cockroaches outwitting robots, themes of buried treasure and fraud detection, a revolutionary new rock cycle, the real truth exposed about the so-called evolution of bacterial resistance, intelligent molecules in nature…this was the delicious smorgasbord of ideas presented at the *8th European Creationist Congress* this year. Hosted by creationists in Sweden, delegates from at least 15 nations enjoyed a feast of lectures on many Creation themes, in a beautiful family-inclusive seaside setting conducive to great fellowship, relaxation and restoration for body, mind and spirit. Now that's my idea of a perfect holiday! Here is a taste of a few themes.

Paul Nelson © Sheena Tyler, 2003

Intelligent Design

Imagine a man lies bleeding on the floor in a restaurant (this is a true story). He says that he slipped on some jelly, and threatens to sue the restaurant. He then offers to accept an immediate cash settlement because he has pressing business elsewhere. Well, it could have been an accident, except for one little detail. The man had gone all over the United States slipping over mint jelly in restaurants! The evidence points to a deliberate cause, that the fraudster had an intention to fall. Similar basic logic can be employed when we detect an intelligent cause in nature.

So began a magnificent lecture by **Paul Nelson**, from the Intelligent Design movement at the Discovery Institute in the USA. He described the recent design of a robot that was built on a plan similar to a cockroach. The problem with the robot was that it kept falling over, and it took a team of skilled engineers *over two years* to write the computer code, with a large input of information, to *overcome this problem!* Nelson then compared the robot with its real-life counterpart. Now no one questions whether or not the robot was designed. Putting just wires into a box for 10,000 years doesn't produce one! Robots are far from as efficient as an insect, but the evolutionist's conclusion as to whether the insect is designed is: *"of course…not"*. This is in spite of mankind being so accustomed to design inferences essential to much human enquiry: forensic investigations (to incriminate the suspect's criminal designs); patent and property law (for example to detect plagiarism in a published song tune); code-making and code breaking; detection of fraud, as in the restaurant case; archaeology and palaeoanthropology, etc.

So, how did life come to be? It could have arisen naturally or be designed. Imagine the issue to be like searching for buried treasure on an island. The true origin is represented by the treasure. But the methodological naturalist creates a "no dig zone" there, putting a screen between you and your evidence. As a result, we are constrained to dig on the wrong part of the island, where we will never find the answer.

Nelson also spoke about Common Descent (the idea that all life is related by common ancestry). He showed evidence that challenges Common Descent (e.g. the puzzle of why ORFan [open reading frame] genes are so different from one another if they are supposed to have descended from a common ancestor). He concluded that people are holding on to Common Descent for other, ideological, reasons.

Man and apes compared

The next time you hear of the evolutionary claim that our genes are 99% the same as apes, you might like to bear in mind the following evidence to the contrary! **Dr Andre Eggen**, from France, spoke on gene sequencing. Firstly, he compared human and mouse gene sequences. There is evidence that their genomes are more rearranged than is thought, and that there are a large number of micro-rearrangements to explain. For example, there are 3170 micro-rearrangements between 281 synteny (conserved sequence) blocks of at least one megabase. Secondly, there are indications that introns are being lost. Therefore we have a degenerating genome, rather than one that is advancing in evolutionary complexity. Thirdly, it depends upon what part of the genome one makes comparisons with: they vary enormously. The whole genome has not been sequenced yet in organisms such as the chimpanzee, making full comparisons impossible. Moreover, molecular clocks appear to have variable rates. There can be different rates between proteins, RNA, and even within a molecule. So, the more detailed the maps are, the greater the differences become between the phylogenetic groups. This is extremely difficult to resolve in evolutionary terms.

Dr Stuart Burgess, a Reader in Engineering Design at Bristol University, spoke of the beauty of man. In contrast to the prevailing evolutionary view that man is highly similar to apes, Burgess showed evidence to the contrary. There is a whole range of features that enables humans alone to be truly upright. One example is the human's arched foot, which is vital for upright balance. Burgess commented, "An arched foot can't have evolved from a flat beam. Just like a bridge design, it must be a complete arch." Another example is the inner ear. Unlike in apes, in man the vertical semi-circular canals of the ear are very large, to enable special upright balance. Moreover, humans have at least 58 different hand movements, compared with three in apes, with a concomitant greater area of motor cortex in the brain to co-ordinate the human hand movements. Thus, even an ordinary child can learn, say, to play the piano at over 20 notes per second! The human also has an enormously high density of nerve receptors to aid dexterity (1500 per square centimetre). We have over 50 facial muscles. At least 24 of these are not present in the gorilla. Thus we can make at least 10,000 facial expressions, compared with the gorilla's five. Sophisticated language is possible in humans because of an optimal voice-box with around 100 muscles, to enable about 100 different sounds, compared with about five in apes. Humans have a unique brain, too, with up to 100 billion neural connections. In a baby ape, there is a large reduction in the brain growth rate after birth. But in the human baby, four million synapses (nerve connections) are added every second throughout the first two years! Burgess spoke of the elegant beauty of the human form, concluding that our nearest relative is God, not apes! God cares for man, giving him lots of muscles to smile with, and billions of neurons to appreciate music and the rest of creation.

The evolution of proteins

Professor Matti Leisola, a protein engineer at the University of Helsinki, spoke of the origin of protein families. *"Nature is full of intelligent molecules," he explained. "The evolutionary view that proteins have originated from step-by-step processes has problems. There is no evidence that random chemical reactions can produce novel protein building blocks or proteins. There is no evolutionarily effective Darwinian pathway from one protein fold to another. The protein sequence space between them is enormous, and no evidence supports the assumption that functional proteins are common in this space. Macroevolution is really at a dead end."*

Geology: the rock cycle

On a geological note, **Dr David Tyler** gave a beautiful overview of his proposed rock cycle in which geological processes are driven by tectonic forces (earth movements). This liberates geologists from being locked into "deep time" and provides a conceptual framework that enables the global Flood to be recognised in the field data. In most education programmes, students are provided with interpretive tools that brainwash them into presuming long timescales. The new rock cycle is a tool that enables a radically different understanding of the same data.

Information and mutations

Professor Werner Gitt, from Germany, spoke of the origin of information. There are five levels of information: **statistics** (sequence of symbols); **syntax** (the grammar and rules for the language); **semantics** (the meaning and significance); **pragmatics** (the action required); and **apobetics** (the conceptual purpose, or result to be achieved). Gitt concluded that since the DNA code has all five levels of information, there must be an Intelligent Sender. Since the density and complexity of DNA-encoded information is billions of times greater than man's technology, the Sender must be supremely intelligent (omniscient). Since the Sender must have encoded all the information, constructed the encoding machinery and designed all the creatures, He must be omnipotent.

Dr Lee Spetner, an American physicist based in Israel, showed that random mutations cannot account for evolution. The best experimental evidence often given for evolutionary change through mutations is that which leads to the development of antibiotic resistance in bacteria. Spetner showed that one way this occurs is by gene transfer of the pre-existing natural antibiotic resistance from the bacteria or fungi producing the antibiotic. Another way is by the mutation damaging the antibiotic drug's ribosomal attachment site. Normally the drug would thus stop the pathogenic bacterium's synthesis of protein at that site. However, if the mutation degrades this site, the bacterium becomes resistant by losing its sensitivity to the drug. In both these cases, new information is not created, but rather lost. Such processes do not lead to the common descent that naturalists advocate.

Other insights; is the Bible trustworthy?

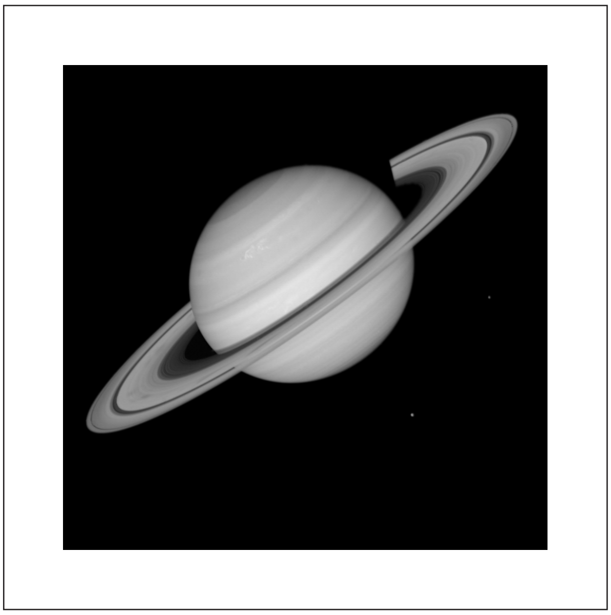
Other speakers, to name but a few, included **Dr Harold Binder**, from Germany, who gave new insights from amber; **Dr David Rosevear**, from the UK, recounting the history of the Congresses and presenting a superbly illustrated analysis of origin of life theories; a discourse on entropy by **Professor Peder Tyvard** of Norway; and an address by **Stefan Gustavsson**, head of the Swedish Evangelical Alliance. Gustavsson showed how changes in our culture's presuppositions and worldviews about the Bible's infallibility and trustworthiness need to be identified and addressed if we are to reach our neighbours. The preconditions that have been eroded (following the ideas of Norman Geisler) include the Revelational precondition – that there is a God who reveals Himself in general, in history, and in the Bible; the Metaphysical precondition – that there is a theistic God who exists; the Supernatural precondition – God created the world and intervened in it; the Rational precondition – we can reason about the Bible, because God is the logos, the logical one, who has created our minds; and the Epistemological precondition – that Truth is not for just you or me exclusively (perhaps this is the most pervasive problem of our culture, I would add). So, many people have changed their view of God because the culture no longer believes, for instance, in the supernatural, or in absolute truth. He gave four reasons why we can indeed believe in the Bible: philosophical (the Bible gives the best explanation of the world I find myself in and the existence of the universe); historical (many Biblical stories can be confirmed by archaeology); existential (the Bible speaks to my needs, challenges and liberates me); and Christological (the historical evidence indicates that Jesus is who He claims to be: the Son of God. We therefore believe the Bible on His authority, because He believes it to be true and trustworthy).

In this battle of the worldviews, the doctrine of Creation has clear answers. This year's European Congress gave us even greater confidence that this is so. Evolution has tried to destroy the truth. But the Truth, and the Author of Truth, is stronger. The scientific evidence, more than ever, is pointing that way.

JAMES CLERK MAXWELL

and his Christian faith

Neil Brownrigg



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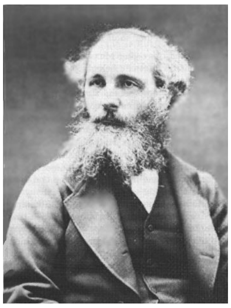
Maxwell – the scientific giant

James Clerk Maxwell (1831-1879) was one of the great scientists to dominate the intellectual landscape of physics, especially electrical and magnetic science. Maxwell's major contributions extended over a wide variety of fields. He not only worked in optics, colour vision, and elasticity but, while at Aberdeen University, he made an analysis of Saturn's rings, which showed that they could not be rigid, but were made up of swarms of particles. This was verified by the first Voyager space probe to reach Saturn.

Maxwell was the first person to apply methods of probability to the analysis of the properties of gases. He invented the idea of a **Distribution Function** governing the velocities of individual molecules of gases. His equations are commonly encountered in the field of statistical thermodynamics.

He was most famous for his formulation of what are commonly known as the '**Maxwell equations**'. The package consisted of four equations that neatly set out, with some elegant mathematics, the relationship between magnetic and electric fields and their sources. These equations also predicted the existence of electromagnetic waves. Heinrich Hertz verified these electromagnetic waves in 1887, and its commercial exploitation by M.G. Marconi and others led to our present radio, television, and satellite communications.

> **WE HEAR SO MUCH ABOUT THE WORKS OF GREAT SCIENTISTS, BUT WE DON'T HEAR MUCH OF THE FAITH THEY HAD IN GOD THAT INSPIRED THEM.**



James Clerk Maxwell (1831-1879), mathematical physicist.

It is worth adding that Einstein's insistence on the correctness of Maxwell's electrodynamics led him to publish a paper in June 1905 that introduced the theory of special relativity. Maxwell's work in thermodynamics also helped lead Max Planck to formulate his radiation law, thus introducing quantum theory.

While I was studying physics at university, I spent many hours working on Maxwell's equations. I am now employed in the field of photolithography, where patterns are imaged to a fraction of a wavelength of visible light onto silicon wafers, in order to fabricate microchips and similar devices. These things were not dreamed of in the days of Maxwell. Yet I still marvel at his achievements and how they have impacted so many areas of science and, indeed, everyday life. Furthermore, as a Christian working in what has largely become a secular work place, I draw great comfort from pioneers like Maxwell, whose faith in God brought great insights into the physical world. We hear so much about the works of great scientists, but we don't hear much of the faith they had in God that inspired them. Here is a brief glimpse into James Clerk Maxwell's life and faith.

Maxwell – the man of faith

Maxwell was the founder of the Cavendish Laboratory at Cambridge University. Over the original front entrance of the Laboratory is inscribed a sentence in Latin, which is a quote from the Latin Vulgate Bible (Psalm 111:2). The verse in English reads, *'Great are the works of the Lord; they are studied by all who delight in them.'*

'GREAT ARE THE WORKS OF THE LORD; THEY ARE STUDIED BY ALL WHO DELIGHT IN THEM.'

Maxwell's religious outlook was directly influenced by the Bible. At one time he spoke of *'Christianity – the religion of the Bible'* (Campbell and Garnet, 1882, p.179). He had an extraordinary memory and, as a child, he was encouraged to commit large portions of Scripture to memory, particularly the Psalms:

'His knowledge of scripture, from his earliest boyhood, was extraordinary, extensive and minute; and he could give chapter and verse for almost any quotation from the Psalms... These things were not known by merely rote. They occupied his imagination, and sank deeper than anybody knew.' (Campbell and Garnet, 1882, p.32).

Maxwell's Christian commitment was very practical. He gave generously of his time and money. He visited the sick and those confined to their homes. Family devotions were evidently an important part of the day, in sickness and in health. After his father's death, James took up his duties seriously, to conduct family worship as head of the household. This continued even when his final illness had begun to take hold: *'In the evening, however, the master of the house conducted family worship as usual for the assembled household.'* (Campbell and Garnet, 1882, p.407). It is recounted how, during his second sickness in 1865, Mrs Maxwell was again his nurse, and he insisted on listening to her quiet reading of their usual portion of Scripture every evening even though *'it was the utmost mental effort that he could bear.'* (Campbell and Garnet, 1882, p.320). Campbell and Garnet's biography keeps pointing to the spiritual life of their marriage, and the mutual care and concern they had for each other. Even in physical pain, James enjoyed the times of spiritual refreshment.

Maxwell – interaction between science and faith

Maxwell recognised that the omnipotent God has revealed Himself in His Word (the Bible) and in His works (the created universe), and that these two revelations are intrinsically compatible. More than that, Maxwell was convinced that scientific investigation and the teachings of the Bible should be linked together. This is reflected in his prayer:

'Almighty God, Who has created man in Thine own image, and made him a living soul that he might seek after Thee, and have dominion over Thy creatures, teach us to study the works of Thy hands, that we may subdue the earth to our use, and strengthen the reason for Thy service; so to receive Thy Blessed Word, that we may believe on Him Whom Thou has sent, to give us the knowledge of salvation and the remission of our sins. All of which we ask in the name of the same Jesus Christ, our Lord.' (Maxwell, in a prayer among his notes; cited in Williams and Mulfinger, 1974, p.487).

Maxwell was able to refute evolutionary thinking which, at that time, was growing in popularity. He believed that evolutionary thinking contradicted scientific evidence. In 1873, he presented a paper to the British Association for the Advancement of Science, in which he stated:

'No theory of evolution can be formed to account for the similarity of molecules, for evolution necessarily implies continuous change...' ('Discourse on molecules' cited by Williams and Mulfinger, 1974, p.487).

The German philosopher, Immanuel Kant, hypothesized in 1755 that the solar system had begun with a rotating gaseous nebula out of which condensed globular bodies that became the Sun and planets. Essentially the same theory, then called '**the nebular hypothesis**' was proposed by the French mathematician Laplace in 1796. According to this model, the hot rotating gas cloud began to cool and contract; as this happened, the law of conservation of angular momentum would have required a much more rapid rate of rotation. This acceleration was supposed to have flung off rings, which condensed into the planets.

However, Maxwell and Sir James Jeans refuted the nebular hypothesis a hundred years later by showing that there was insufficient mass in the rings to provide enough gravitational attraction to form planets. Then, astronomer F.R. Moulton of Chicago called attention to the fact that the planets of our solar system carry 99% of the angular momentum of the solar system while the Sun has 99.9% of the total mass. The nebular hypothesis couldn't possibly be correct, else the Sun would presently be rotating a hundred times faster than it does now (once every 27 days) in order to conserve and distribute the angular momentum of the system correctly.

Thus Maxwell helped to refute 'the nebular hypothesis' and Laplace's claim that the cloud of gas took millions of years to produce the planets, *and that there was no need for a Creator!*

The Bishop of Gloucester and Bristol asked about his ideas, his faith, and his science. The Bishop had enquired as to whether the creation of the Sun after the creation of light in Genesis 1 can be harmonised by regarding the latter as 'primal vibrations' in the aether. Maxwell replied to this rather naïve question with great wisdom:

'If it were necessary to provide an interpretation of the text in accordance with the science of

1876 (which may not agree with that of 1896), it would be very tempting to say that the light of the first day means the all-embracing aether… But I cannot suppose that this was the very idea meant to be conveyed by the original author to those for whom he was writing.

But I should be very sorry if an interpretation founded on a most conjectural scientific hypothesis were to get fastened to the text in Genesis… The rate of change of scientific hypothesis is naturally much more rapid than that of Biblical interpretations, so that if an interpretation is founded on such an hypothesis, it may help to keep the hypothesis above ground long after it ought to be buried and forgotten.

At the same time I think that each individual man should do all he can to impress his own mind with the extent, the order, and the unity of the universe, and should carry these ideas with him as he reads such passages as the 1st Chap. of the Ep. to Colossians (see Lightfoot on Colossians, p.182), just as enlarged conceptions of the extent and unity of the world of life may be of service to us in reading Psalm viii, Heb ii 6, etc.' (Campbell and Garnet, 1882, p.393).

Thus Maxwell penetratingly criticised the misuse of partial scientific knowledge to interpret Scripture, let alone to shore up faith by supposed harmonisation with the latest science. He had no need of scientific proofs of Christianity. Instead, his expressed concern was that ill-judged linking of specific scientific theories with religion would be an impediment to the growth of science. And his emphasis, in relating science and faith, was in science's enhancement of our wonder at the glory of creation. Certainly a much more enduring theme than the aether, which has long since been discarded!

During his final illness, the Minister who visited him regularly in his final weeks, was astonished at his great learning and commented:

'…his illness drew out the whole heart, soul and spirit of the man: his firm and undoubting faith in the Incarnation and all its results; in the full sufficiency of the Atonement; in the work of the Holy Spirit. He had gauged and fathomed all the schemes and systems of philosophy, and had found them utterly empty and unsatisfying – 'unworkable' was his own word about them – and he turned with simple faith to the Gospel of the Saviour.' (Campbell and Garnet, 1882, p.416).

To summarise, much can be learned from the way Maxwell led his life. His work has shaped modern thinking and the society in which we live. We are indeed beneficiaries of this great thinker. As a result of the triumphs of his mind, he has been ranked equal to Newton two centuries earlier, while at the same time he was a very modest man, who had a deep faith in God. I am struck by his wisdom in refusing to use partial scientific knowledge to interpret Scripture. I am reminded of how God reveals His omnipotence to Job: *'Who is this who darkens council by words without knowledge? Now prepare yourself like a man; I will question you, and you shall answer Me. Where were you when I laid the foundations of the earth? Tell Me, if you have understanding…'* (Job 38:2-3). In short, we don't know how God went about it, but we can surmise, using the 'tools' that we have. The Apostle Paul wrote *'…whether there are tongues, they will cease; whether there is knowledge, it will vanish away, for we know in part and we prophesy in part, But when that which is perfect has come, then that which is in part will be done away'* (1 Corinthians 13:8-9). Maxwell's outlook on religion is summed up in Psalm 111. He believed in God the Creator and Sustainer of all things, a God of righteousness, truth and justice, who cares for His covenant people. Maxwell's faith was a good foundation, on which he laid his knowledge. We can study nature and look at it in 'different lights'; but for nature to reveal itself in full glory, we have to see it in the true light.

I will close with the Psalm, which was close to James Clerk Maxwell's heart.

Psalm 111 (New King James Version)

1. PRAISE the Lord!
   I will give thanks to the Lord with all my heart,
   In the company of the upright and in the assembly.
2. Great are the works of the LORD;
   They are studied by all who delight in them.
3. Splendid and majestic is His work;
   And His righteousness endures forever.
4. He has made His wonders to be remembered;
   The LORD is gracious and compassionate.
5. He has given food to those who fear Him;
   He will remember His covenant forever.
6. He has made known to His people the power of His works.
   In giving them the heritage of the nations.
7. The works of His hands are truth and justice;
   All His precepts are sure.
8. They are upheld forever and ever;
   They are performed in truth and uprightness.
9. He has sent redemption to His people;
   He has ordained His covenant forever.
   Holy and awesome is His name.
10. The fear of the LORD is the beginning of wisdom;
   A good understanding have all those who do His commandments.
   His praise endures forever.

NOTES

Campbell, L. and Garnet, W. (1882). The life of James Clerk Maxwell. Macmillan and Company, London.

Williams, E.L. and Mulfinger, G. (1974). Physical science for Christian schools. Bob Jones University Press, Greenville, South Carolina.

Is *Scientific American* unscientific? J H JOHN PEET

John Rennie, editor-in-chief of the leading American popular science journal, *Scientific American*, charges creationists with being unscientific. In the July 2002 issue, he has written an article headed '15 answers to creationist nonsense', claiming that creationist arguments do not hold up.[1] One wonders why, if we are so stupid, they are so worried about us! Why do we have such an impact? Reading this article, though, one asks another question, 'Is this the best they can do?'

John Rennie has picked what he considers to be the key challenges we make to the evolutionist, but he is clearly ignorant of much of the creationist position. He barely begins to answer challenges such as those in *Icons of Evolution* by Jonathan Wells.[2] The initial statements in each section are the statements he attributes to creationists followed by his comments. I will then respond.

1. Evolution is only a theory

Rennie denies that scientists distinguish between such terms as 'theory' and 'facts'. He then proceeds to try and make a subtle distinction between them! Theory, he says, is a well-substantiated explanation which incorporates facts, laws, etc. A fact is an observation that has been repeatedly confirmed *and is accepted as true.*

It is true that scientists do tend to use terms in this way rather than as would be understood in a legal sense. Of course, on the basis of this definition, many scientific 'facts' have become obsolete when new observations contradict them. A classic illustration from scientific philosophy concerns the colour of swans. We might note that all the swans on the River Thames are white. When we travel to other rivers isolated from the Thames, we see the same thing. So we state the fact that 'all swans are white'. That becomes a non-fact when we travel to another place and discover black swans!

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It is worth advising creationists against using the argument that 'Evolution is only a theory'. This is a statement which is often misunderstood by the layman as meaning 'wild speculation' which is not the scientific meaning of the word.

2. Natural selection is a circular argument

Rennie's response is to use a bit of word play and replace the concept of survival value with 'adaptive fitness'. For example, large beaks in finches are better adapted for crushing seeds than small beaks. He says that adaptive fitness is not necessarily related to survival value.

Creationists do not dispute the concept of natural selection but it is not clear that it has an evolutionary value – it does not 'push' evolution in an upward direction, that is, the adding of information. For example, the work he quotes on the finches shows that these changes are reversible and do not represent any genetic development. Similarly, we have heard about the embarrassing disclosures on the peppered moth, supposedly the best evidence for evolution by natural selection!

3. Evolution is not falsifiable and so is unscientific

He acknowledges that most creationists accept microevolution but claims that we dispute the historical nature of macroevolution, which is based on fossil evidence and DNA studies. In fact, the distinction between micro- and macro-evolution is artificial in that the latter simply means any change above the species level. We recognise that occurs. A better distinction is between new genetic information (which is not observed) and genetic changes that lead to a loss of information (which are observed).

The theory can, he claims, be used to see if it is in accord with physical evidence and also to make predictions. As evidence of this, he points to hominid evolution! The prediction of the theory is that as we go through the fossil record, the remains become less ape-like and more like modern man. For example, there are no human remains in the Jurassic. (Actually, he makes an error here in dating the Jurassic to 65 million years ago which, on their timetable, is the end of the Cretaceous).

Again Rennie seems to be ignorant of creationist arguments, if not of the evidence! The evidence can be interpreted in terms of either model (see our publication *Is Man descended from Adam?* by Reinhard Junker).[3] The challenge is then to see which model fits best. One only has to listen to the news to see how every fossil hominid seems to challenge previous theories rather than confirm them. There is no evidence of intermediate forms: they are either ape or man. The *Homo* creatures are always true human according to the archaeological evidence. In terms of the distribution of the fossils in the different strata, he is obviously ignorant of the Recolonisation Model of the fossil record (as snapshots of the recovery of the world from the Flood catastrophe).

It is true, as he states, that Popper's work has been superseded by other philosophies of science but we would say that the approach of falsification is still valid. In his answer, Rennie points to experimental work in biochemistry as a source of evidence in support of the power of the theory to explain the origin of life. He says that the demonstration of the spontaneous generation of a life-form would disprove Darwinian evolution which requires multiple small changes rather than a single large step.

If we could synthesise life in a test-tube, it would not prove anything but that we can synthesise life in a test-tube! It would not demonstrate that the origin of life did occur that way. As most chemists in that field admit, they have barely scratched the surface in trying to find a solution. (Interestingly, he readily references articles in *Scientific American* – except at this point. The one they published[4] demonstrated the paucity of support for chemical evolution). They have no suggestion as to how the primeval atmosphere generated the small molecules of life. They cannot explain how these polymerised (joined together) to give the giant molecules. They cannot explain how the hundreds of structurally specific proteins required by the cell can be produced in the time scale that they claim.

4. Increasing numbers of scientists doubt the theory

He disputes the claim and points to the lack of papers in the professional journals challenging the theory. This is a circular argument. It is well documented that you cannot get such papers published. Universities will not normally permit creationist research in their laboratories. (One scientist from our parallel German organisation, *Wort und Wissen*, was forced by his institution to amend his web site which published support for Creation.) However, books have been published by non-creationists challenging the theory. We have a number of scientists holding chairs in universities on our Council of Reference. Dr Arthur Jones recently published a popular version of the results of his PhD research on speciation which confirm the creationist position and challenge the evolutionary one.[5]

5. Scientific disagreements about evolution show it is not a solid theory

He rightly points to the fact that debate is the meat of scientific research – but in all the evolutionary debates only naturalistic hypotheses are allowed; creationist arguments are ruled as inadmissible before the debate is opened. Even creationists debate on detail, but that does not invalidate our position.

He throws out the usual claim that evolutionists have been quoted out of context for arguments against evolution. Though this is a common complaint, what is really meant is that they do not like *who* is quoting them; I believe that specific claims have been countered.

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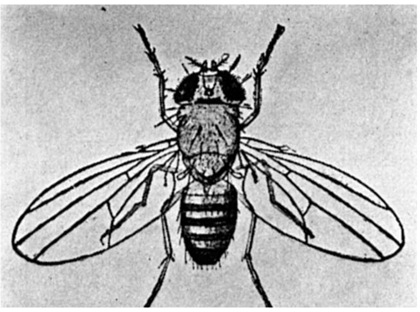

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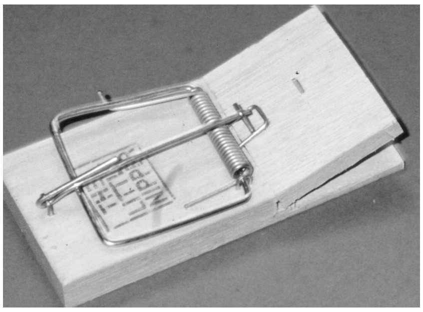

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6. Why are there still monkeys if evolution is true?

This, Rennie suggests, results from a misunderstanding of evolutionary theory.

That is a fair statement, but I believe it is the result of early forms of evolutionary theory. Many of us were brought up with the idea that evolution was a linear process – in fact, some books probably still show such a sequence for hominid evolution. If the argument were valid, we could legitimately ask why we cannot see the intermediates still being formed today – or at least some of them rather than none. Incidentally, I have never heard a creationist lecturer make this claim as Rennie asserts; it is a statement that may be made by some laymen but not by informed creationists.

7. Evolutionists cannot explain the origin of life

Rennie agrees that it is still very much a mystery, but he clings to the possibility of the origin of life in space. This, of course, is a cop out: it just moves the problem to elsewhere! As a fall-back, he claims that evolution is still true even if the process of chemical evolution cannot be demonstrated! His arguments beg the question as to whether these experiments are really relevant.

8. Mathematically, it is impossible for evolution to occur by chance processes

He begins by denying that evolution depends on chance to create organisms, proteins, etc. Natural selection, he claims, harnesses non-random change by preserving 'desirable' features and eliminating the 'undesirable'. He refers to a computer simulation that resulted in a Shakespearean play in $4\frac{1}{2}$ days.

On the former claims, we would ask for his evidence. On the latter, perhaps it shows that Shakespeare was not so clever after all! Seriously, I cannot believe that an educated man falls into that trap. Who made the computer? Who wrote the software? (Mutations in my software always cause a crash – I've never had an improvement!) How did the 'output' know when it had produced something meaningful that should be saved and protected from further mutation?

9. Evolution contravenes the second law of thermodynamics

He claims that the law is misunderstood and then proves he does not understand it! He uses the classic examples of the generation of order in crystallisation and claims that the sun pouring heat and light in is sufficient to cause local order. (He does not understand the difference between order and complexity).

There is an important factor that he misses: to generate order (a decrease in entropy) requires not only energy but also information. There is physical information in the chemical materials which controls the process of crystallisation. In photosynthesis, chlorophyll is a key source of information for the generation of sugars. Without information, raw energy results in photolysis and decomposition, not synthesis.

10. Mutations only eliminate traits and do not produce new features

He quotes examples of bacterial point mutations leading to antibiotic resistance. He mentions that mutated *Hox* genes cause legs to replace antennae in fruit flies. This shows that mistakes can produce complex structures. Duplicated genes can undergo mutation to generate new, complex structures.

The latter example is a 'just so' story and without evidence being presented. A duplicated gene is going to undergo the same mutation rate as the original copy. In the cases mentioned, the genes are modified to produce less fit organisms (as he admits). Again, we emphasise, they involve the *loss* of genetic information. We believe that the evidence for changes in phenotype at the species and genus level indicate that the capability is programmed at Creation and is not random; that is, our good Creator knew that organisms would need to change to adapt to changing environments and built in genetic variation to allow this.

11. Natural selection cannot explain the origin of new species and higher taxonomic levels

He argues for the origin of new species through natural selection. He claims that mitochondria have evolved symbiotically with other ancient organisms.

THAT IS, OUR GOOD CREATOR KNEW THAT ORGANISMS WOULD NEED TO CHANGE TO ADAPT TO CHANGING ENVIRONMENTS AND BUILT IN GENETIC VARIATION TO ALLOW THIS.

The former claim is not challenged by creationists and we acknowledge that new genera may form by related processes within biblical kinds. Again we draw attention to the fact that there is no new genetic information in these cases. The mitochondrion hypothesis is just that; it has no supporting evidence. The recent discovery of organelles in a bacterium is a serious blow to the endosymbiosis theory.[6]

He then makes a remarkable claim: 'Science welcomes the possibility of evolution resulting from forces beyond natural selection. Yet those forces must be natural; they cannot be attributed to the actions of mysterious creative intelligences whose existence, in scientific terms, is unproved.'

Rubbish! 'Science' does no such thing. We see Rennie's materialistic prejudice coming to the surface. There is no such independent authoritative system. He means 'scientists' and then only his selection of scientists. Scientific methodology excludes divine intervention simply because it has no way of studying and measuring such intervention. It ignores it methodologically but does not deny it.

12. No one has seen a new species evolve

He quotes examples of the formation of new species. As indicated above, we do not dispute this, though we may challenge the mechanisms proposed at times. In fact, the biblical model depends on this. For example, to achieve the variety of life we observe today in the 5,000 or so years since the Noahic Flood requires rapid speciation (see Arthur Jones' work referred to above). Recent papers in the secular scientific press on the cichlid fishes confirm the research done by Jones and emphasise the amazingly rapid process of speciation (though they still look at larger time scales than we consider).

13. A lack of transitional fossils

He claims to know many examples of transitional fossils and cites *Archaeopteryx* (reptile to bird), *Eohippus* (horse) and *Ambulocetus* (whale evolution). He then states that over twenty hominids have been found that fit between 'Lucy' and *Homo* sapiens.

Each of these has been covered in our journal previously. For example, *Archaeopteryx* is a true bird and not an intermediate. A true intermediate would involve the existence of half-formed organs. Consider the fish to amphibian transition. The closest fossil relatives are totally different in their limbs, the link of these to the backbone, the skin, the respiratory and digestive systems, the blood system, the eyes, and so on. They need to produce many transitional forms to make a case. Rennie claims that there is support from molecular biology for this concept of intermediates. Lake *et al*[7] stated, 'When scientists started analyzing a variety of genes from different organisms [they] found that their relationships to each other contradicted [other versions of] the evolutionary tree of life.'

14. Intelligent design is a better explanation of origins

Rennie sees this approach as the 'backbone of most recent attacks on evolution' and claims that researchers have identified primitive eyes that show how modern eyes could have evolved.

Interestingly, the intelligent design movement is not a primarily creationist movement though we encourage the development of the ideas. It is a classic manipulation of the data to describe the earlier eyes (on an evolutionary timescale) as 'primitive'. The most primitive, then, must be the trilobite eye but even the evolutionists who have studied this have been stunned by its complexity and would hesitate to call it primitive.

15. Complex structures at the microscopic level are irreducibly complex

This is an extension of the intelligent design argument. He picks on a couple of examples put forward by Michael Behe: the bacterial flagellum and blood clotting. He claims that the former case has been shown to be possible through the existence of simpler flagella elsewhere in nature. What about the complexity of these? How did they change into the bacterial flagellum?

In the case of blood clotting, he points out that the intermediate proteins can be modified and elaborated from those used in digestion. I do not see how this affects Behe's argument. We are not simply talking about individual proteins, but carefully balanced systems. To take the mouse trap, which he decries as an example, the components could be used for other things around the home, but it is only as they come together in the complete, working system that they act as a mouse trap – and that needs design. Behe has published clear defences of his case.[8]

He attacks the work of Dembski, claiming that there are alternative processes to be found in non-linear systems and cellular automata research. Some complexity, he claims, can arise through unknown systems – as long as it is not divine! We do not deny natural processes. In fact, he makes a classic mistake in setting up his straw man: he postulates a 'God of the gaps' philosophy which we do not follow. Dembski has specifically responded to this 'God of the gaps' charge. He points out that an archaeologist, for example, concludes that a vase is a product of intelligent design (not chance or natural law) – but no-one accuses him of being intellectually lazy by invoking a 'vase-maker of the gaps'!

Yes, we do believe in the miraculous. We do believe in deliberate, intelligent design. We do believe in mutations. We do believe in molecular processes. We believe in a God who is overall: He is sovereign. He oversees everything in His providence.

We see, then, that Rennie has produced a straw man to present to the uninitiated reader of his journal what the creationist believes. The claims are usually inaccurate and certainly show an ignorance of what informed creationists actually say. When his claims in support of evolutionary theory are examined, we find them wanting. He proposes, as a philosophical principle, a naturalistic process, assuming that this must exclude an intelligent Creator. As I mentioned in the introduction, if this is the best that the evolutionary community can produce, then they have demonstrated once again that they are building on sand.

Acknowledgment

The author would wish to acknowledge the helpful comments of Paul Garner in the presentation of this response.

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DISCOVERY OF HORMONES

MADE BY BIBLE-BELIEVING BRITISH PHYSIOLOGIST, ERNEST STARLING

Alan L Gillen

THE WORD **HORMONE** DATES TO 1902. British physiologists, Sir William Bayliss (1860-1924) and Ernest Starling (1866-1927) first described such chemical regulators as hormones after performing extensive experiments on dogs. Bayliss and Starling were trying to find out what triggers the secretion of pancreatic juices when food is travelling through a dog (canine) intestine. It was already known that as acids are mixed with food in the stomach, then the pancreas secreted an alkaline solution after the acidic mixture. The chyme was propelled forward into the small intestine. Was the nervous system or another stimulus creating the pancreatic response? Bayliss and Starling blocked the nerves leading to a laboratory animal's upper small intestine to find an answer to their research question. They were also careful not to block the blood vessels that might carry chemicals to the duodenum. During the course of the experiments, when acidic food entered the small intestine, the pancreas still secreted the alkaline solution. Extracts of cells from the intestinal lining, a glandular epithelium, also induced this same response. This observation was a pivotal clue in solving the mystery of what regulated the intestinal response. Glandular cells had to be the source of the pancreas-stimulating substance. The substance came to be called **secretin**. Proof of its existence and mode of action confirmed a very old idea, that substances in the blood regulated for certain body functions. The bloodstream picks up internal secretions, hormones, which can influence the activities of organs inside the body.

> "Who hath put wisdom in the inward parts or who hath given understanding to the heart?"

Ernest Starling not only co-discovered hormones, but he was also the first scientist to use the phrase, *wisdom in the inward parts*, to characterize the body in balance. These ideas stemmed from his observation that the body was designed with an integration of nervous and chemical signals to regulate the body. Starling associated the 'body in balance' with the wisdom found in the inward parts designed by the Creator. He spoke about this co-ordinated communication among cells like those in the stomach, the intestines, the lung and kidney, and further developed mechanisms describing regulatory processes, like the acid-base balance in the gastrointestinal tract. Ernest Starling was a Bible-believing physiologist, and was motivated by the Scripture to discern what kept the body in balance. He observed that the change in a gland or organ was a direct consequence of hormones. As Bayliss and Starling continued their research, they identified many other hormones and their sources, mostly in dogs and later in humans.

Homeostasis and wisdom of the body

Drs Starling and Bayliss used the term, hormone, for chemical messengers that *excited* or catalyzed body reactions. They named it for the Greek word, ***opμuaw***; 'I excite.' It was discovered from the early days of research that hormones were *very specific* in their target. In his delivery of a prestigious lecture to physicians in Great Britain, Starling expanded on the concept of hormones as chemical messengers and regulators, to chemicals that maintained precise balance through highly specific instructions to cell receptors that governed normal growth, development, and wellness. Starling saw a correlation between the Bible verse and biology in Job 38:36 (KJV): *"Who hath put wisdom in the inward parts or who hath given understanding to the heart?"* Starling saw the mind and heart as equivalent. Therefore, the wonder of the human body is not only in the wisdom of its endocrine physiology, but also in the breadth of its mind, or intelligence.

Nine years after hearing the famous lecture by Ernest Starling, Walter Cannon coined the term *homeostasis* in his book, *The Wisdom of the Body*, and built upon Starling's theory. In turn, Starling further advanced the theory of homeostasis when he described this as a condition of uniformity that results from the adjustment of living things to changes in their environment. He described detailed physiological mechanisms for this co-ordinated regulatory balance. All the mechanisms of life, no matter how varied they are, have only one object, to keep the conditions of life constant in the internal environment. Indeed, the Creator put wisdom in the "**inward parts**" (Job 38:36). This wisdom is evident in the process of homeostasis: balance, order, regulation, and chemical feedback. It is the Creator who has given understanding to biologists and physicians as they have discovered the mechanisms that an Intelligent Designer set in motion in the human body. In the endocrine system, its glands and hormones, we find design, order, and complexity to maintain our health and wellness.

Dr Alan Gillen is a biologist with a doctorate in Science Education. Having taught biology for 23 years at all levels, he is presently a lecturer at Pensacola Christian College in Florida, USA. He is the author of Body By Design *(Master Books, 2001) and co-author of* The Human Body: An Intelligent Design *(Creation Research Society, 1999) and* Biology: Revealing Design, Order, and Complexity *(to be released in 2005). His professional interests include effects of exercise on the heart, the complexity found in blood clotting, antibiotic resistance in microbes, how the immune system is designed to interact with microbes, and variation in common cold viruses.*

Herto Man in the limelight

DAVID J TYLER

In mid-June, the fossil skulls of three ancient humans hit the headlines. Perhaps surprisingly, there was no suggestion that they belonged to ape-men. No, these were human remains: two adults and a child. Along with the skulls were lots of animal bones and stone tools that looked as though they were used for removing flesh from a carcass. Not particularly unusual, you might think. This kind of thing is still practiced in some parts of the world. We did not see headlines like: 'Human beings lived in Africa and hunted animals'! Why make such a fuss about these skulls?

The crucial ingredient that made the finds so important is their alleged date. At 160,000 years ago, these are said to be the earliest 'modern' human fossils. This alone explains the headlines: 'Dawn of human race uncovered' *(New Scientist)*, 'Oldest human skulls found' *(BBC News)*, 'He's the daddy of us all' *(Daily Mail)*, 'The beginning of modern humans' *(New York Times)*.

The evolutionary spin on these finds provides a significant contrast with the biblical record. Genesis presents us with Adam as the 'daddy of us all'. Adam and Eve were the first parents of the human race. Their sons were not hunters but arable and livestock farmers. The quoted date does not seem compatible with biblical time scales of history, even allowing for some leeway in interpreting the genealogical information. Understandably, some perplexity might be expected in the minds of Bible believers reading these news reports.

Two major evolutionary interpretations have been proposed for the emergence of modern man. The most popular is the 'Out of Africa' model. The minority view is termed the 'Multiregional' model. The new fossils fill a gap in the story and are claimed to favour the 'Out of Africa' scenario. This is the main reason why the finds are considered significant.

Evolutionists have developed a story of ape-like creatures gradually becoming fully human. The majority of the action takes place in Africa, the so-called cradle of humanity. From that continent, successive migrants emerged to colonise Europe and Asia. Europe became the home of Neanderthal Man and there has been an intense debate about whether Neanderthals contributed to the gene pool of modern humanity. The finding of modern humans in Africa 130,000 years before the Neanderthals died out suggests that European Neanderthals did not leave a genetic legacy. The implication is that they were replaced by modern men coming out of Africa. By contrast, the Multiregional model proposes simultaneous, independent, convergence towards modern man occurring in different regions of the earth.

Add to the fossils the similar age estimates of modern humanity obtained by evolutionary genetic analysis, and the fossils can be claimed to represent the dawn of mankind. Consequently, if only these two contending views for explaining where humans come from are considered, the new finds are undoubtedly significant. However, if Genesis is history, there has to be another way of understanding the data.

Before looking at how this find fits into biblical history, it would be wise to review the evidence that these are actual human skulls. All the remains are fragmented, and so questions must be asked about the accuracy of the reconstructions. The child's skull is represented by over 200 pieces collected over hundreds of metres of ground. It is said that skull fragments were recovered from ten humans, but only three have been assembled and published. In the light of this, some caution might be judicious. Nevertheless, as reported, the skulls are slightly larger than the average modern man, and there are some features described as 'primitive'. One commentator pointed out that all of the observed traits fall within the ranges found within the various human races.

The stone tools indicate a high degree of manual skill exhibited only by humans today. Of even greater interest is the fact that the skulls have blade marks and other signs that there were ritual practices after death. Analogous practices have been recorded in some modern societies (a comparison has been made with tribes in New Guinea) and linked to ancestor worship. If this understanding is correct, the bones provide evidence that we are dealing with a truly human society. From a biblical perspective, this means these people were descendants of Adam and Eve.

Using very similar reasoning, we can infer also that Neanderthal Man, despite physical differences, was also truly human and therefore also descended from Adam and Eve. The radioisotope dates used to put an age to all these fossil bones must be capable of being understood in some other way.

The most appropriate time in earth history to locate these different groups of humanity is after the Flood and before the rise of civilization. During this period, most of Noah's descendants lived in the same area and supported themselves by farming until they were dispersed by God when the people constructed the Tower of Babel. Before and after this time, if any people left the main community, they would have entered a world characterized by great climatic instability. They would be forced to become hunters, making the best of a hostile world.

Instead of an evolutionary story, we have degeneration. Instead of ape-men acquiring human skills, we have humans losing them. Instead of these ancient bones inspiring us to become heirs of the world, they are actually a warning against rebelling against God and losing all. For the good news, we cannot do better than turn to the pages of Scripture and His purposes of redemption.

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Review Special

THE GENESIS AGENDUM OCCASIONAL PAPERS

FOR SOME YEARS, THE GENESIS AGENDUM (GA) HAS BEEN ARRANGING PUBLIC LECTURES TO PRESENT NEW MATERIAL FROM HISTORICAL AND SCIENTIFIC SCHOLARSHIP DEMONSTRATING THE ACCURACY OF THE BIBLE. SEVERAL OF THESE LECTURES HAVE BEEN MADE AVAILABLE IN PUBLISHED FORM. THESE OCCASIONAL PAPERS ARE INTENDED TO DISSEMINATE THE RESULTS OF CURRENT STUDY AND RESEARCH, OFTEN IN ADVANCE OF DEFINITIVE PUBLICATION. SINCE IT IS SOME TIME SINCE WE REVIEWED ANY OF THESE PUBLICATIONS IN OUR MAGAZINE, WE FELT IT WAS TIME TO BRING OUR READERS UP TO DATE WITH THE LATEST IN THE SERIES. READERS WHO WISH TO OBTAIN ANY OF THESE HIGHLY-RECOMMENDED PUBLICATIONS WILL FIND DETAILS OF HOW TO DO SO AT THE END OF THIS ARTICLE.

Surtsey – Window on Geological Time

by David J. Tyler. The Genesis Agendum Occasional Paper 4. 1998. £2.50.

The discipline of geology is today dominated by the concept that 'the present is the key to the past'. According to this principle, the present-day cycle of erosion and deposition is sufficient to understand past geological activity. Since modern processes of landscape formation are generally slow and gradual, long periods of time are usually thought necessary to explain ancient landscapes. In this paper, the author challenges this perspective with a case study of Surtsey, a volcanic island that began to form off the Icelandic coast in 1963. Surtsey offers surprising insights into the rapidity of processes in an environment of catastrophe. In astonishingly short time scales, mature landscapes can develop, soft sediments can become hardened into rock, and communities of living organisms can establish themselves. The framework of 'uniformity' established by geologists such as James Hutton and Charles Lyell is now outdated. The author concludes that it is time to replace it with a framework that is open to catastrophism as a fundamental characteristic of Earth history.

Contemporary Cosmology from a Biblical Perspective

by Paul Garner. The Genesis Agendum Occasional Paper 5. 2001. £3.00.

This paper offers an overview of current ideas about the origin and age of the Universe. The big bang theory is examined and found wanting. Besides other difficulties, the 'ripples' in the cosmic microwave radiation – thought to be the 'dying ember' from the big bang – seem to be too small to account for the large-scale structure of the Universe. There is also a discussion of the birth, life, and death of stars, a much neglected area in creationist thinking. Several lines of evidence pointing to a young age for the cosmos are covered, including the winding up of spiral galaxies, the lifetime of short period comets, and the magnetic field of Uranus. The paper concludes with an investigation into one of the most challenging problems for the young age creation position – the travel-time of light through space – and critically reviews the various solutions that have been suggested. Inset boxes offer insights into other aspects of astronomy (e.g. how cosmological distances are estimated, theories for the origin of the moon). Illustrated with colour plates, this is a useful introduction to creation-based astronomy for anyone fascinated by the Universe in which we live.

Another Look at Relating Science and Theology

by Philip Duce. The Genesis Agendum Occasional Paper 6. 2001. £2.50.

Much has been written, from a variety of perspectives, about the complex relationship between Christian theology and science. The author of this paper – a physicist and theologian – tackles the issue from an evangelical position. He explores the similarities and differences between the scientific and theological enterprises, and the interaction between them. Scientists must, and do, bring a type of faith to their work. Like theologians, their personal commitments affect, even direct, their research. The contemporary trend towards relativism and the rejection of objective truth has had far-reaching effects. It has led to the widespread questioning, even dismantling, of the assumption of the objectivity and neutrality of the scientific method. Many are now questioning the myth that scholarship is value-free. The author concludes that there is a critical need for Christian scholars to explore the philosophical implications of a biblical perspective on reality.

The Identity and Nature of the Created Kinds – Speciation Among Cichlid Fish

by Arthur Jones. The Genesis Agendum Occasional Paper 7. 2002. £3.00.

The first half of this paper is an account of the author's doctoral research in zoology at Birmingham University. His topic of research was a family of tropical, freshwater fishes called cichlids. Today, there are well over 1000 species of cichlids and they are found in the Americas, Africa, and Asia. Several African lakes contain unique species of cichlids that must have arisen since the lakes became isolated in the recent past. Thus, the cichlids have become known as a classic example of 'evolution in action'. However, the author's research led him to the conclusion that cichlids were an unmistakably natural group – one of the 'kinds' that God created. The radiation of the cichlids within these lakes is therefore an expression of the inherent diversity that God built into the cichlids at creation. The second part of the paper deals with some other biological topics that the author has investigated, including homology (similarities thought to have been inherited from a common evolutionary ancestor) and cellular views of heredity (which challenge the dogma that 'DNA is everything'). There is much food for thought here.

Radioactive Dating: Research Confirming the Biblical Record

by Andrew A. Snelling. The Genesis Agendum Occasional Paper 8. 2003. £2.50.

Radioisotope dating methods yield multi-million year ages for the Earth and its rocks. These methods are therefore a significant challenge to the young-age creation perspective. In 1997, the Institute for Creation Research in San Diego convened a group of seven scientists (geologists, geophysicists, physicists) to collaborate in a five-year research project on radioisotope dating. This paper is a progress report by one of the scientists involved. The paper discusses the principles of radioisotope dating, anomalous dating results and their interpretation, and presents some important case studies. There is also a section on radiohalos – spherical areas of radiation damage in crystals. Besides giving direct evidence of large amounts of nuclear decay, the radiohalo research is casting light on the rapidity of granite formation in the Earth's past. The author also discusses the implications of the large amounts of radioactively-produced helium retained in crustal rocks in New Mexico. If the conventional age of these rocks is correct (1.5 billion years), the helium should long ago have diffused into the atmosphere. Several lines of evidence seem to be suggesting that nuclear decay rates were faster in the Earth's past, thus accounting for the excessive ages derived by radioisotope studies. The paper concludes with a look at theoretical mechanisms of accelerated nuclear decay and the implications for our interpretations of the geological record.

From Fins to Feet: Did Fish Evolve Into Tetrapods?

by Paul Garner. The Genesis Agendum Occasional Paper 9. 2003. £2.50.

Evolutionists believe that tetrapods – i.e. vertebrates with limbs – were the first animals to move on to the land, having evolved from a fish ancestor during the Devonian period (conventionally 408 to 360 million years ago). Such a transition, if it occurred, would have required radical anatomical and physiological changes, many of which ought to be traceable in the fossil record. During the 1980s, the earliest known tetrapod was *Ichthyostega* from the Upper Devonian of East Greenland. This animal was reconstructed as a reasonably typical land vertebrate, with some primitive features. *Eusthenopteron*, an Upper Devonian lobe-finned fish, was considered to be close to the ancestry of the tetrapods. There was evidently a substantial discontinuity in the fossil record between terrestrial vertebrates and their presumed ancestors. Since 1990 a major re-evaluation of the evidence has taken place, and almost every aspect of the older view of tetrapod origins has been overturned. Prompted by dramatic new fossil discoveries, Darwinists now regard the transition as well established. The author offers a critical review of the latest Darwinian thinking on the fossil record of the supposed transition from fish to tetrapods, and offers some alternative interpretations.

All the above papers are available from The Genesis Agendum, P.O.Box 5918, Leicester LE2 3XE, UK. Cheques must be in pounds sterling drawn on a UK bank. Please add 50p per paper to cover postage. This is also the address to write to if you would like to be added to the mailing list for GA's prayer letter and notification of public meetings. Visit the GA web site at www.genesisagendum.org.uk. Email: mail@GenesisAgendum.org.uk.

BOOK REVIEWS

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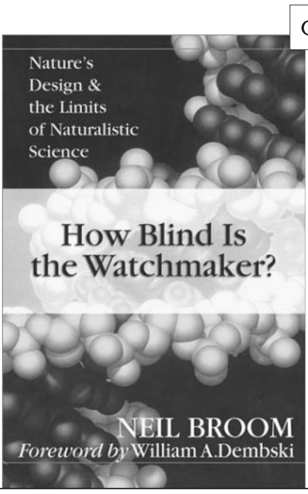


How Blind is the Watchmaker? Nature's Design & the Limits of Naturalistic Science

O1

by Neil Broom. Inter-Varsity Press, Leicester. 2001. 224pp. ISBN 0-85111-554-3.

This book first appeared a few years ago under the imprint of a little known publisher in the UK, but has now been re-issued by IVP. The author is a research scientist from New Zealand with a special interest in biomechanics, and although his argument runs on similar lines to that of the intelligent design (ID) movement in the USA, it was apparently conceived independently. However, in its new edition, it has a foreword by William Dembski, and it now takes account of some of this work, following a similar line to the writings of Dembski, Behe, Johnson, Meyer, Wells *et al.*

Some readers of *Origins* will disagree with his views concerning the age of the earth, which are expressed in a lengthy footnote on page 134. However, these are incidental to the main thrust of the book, which is – in the words of the subtitle – an exploration of the 'limits of naturalistic science'. Nor, despite the title, is it a direct rebuttal to Richard Dawkins's well-known *The Blind Watchmaker* – its concerns are somewhat wider.

The opening chapters relate to science and the philosophy of science. (An appendix also provides a brief but useful sketch of the historical background.) Broom explains clearly the limitations of the scientific method, and points out in particular that science is *not* independent of the human mind. The irony of modern science is that it fails to acknowledge this, and this is nowhere more apparent than in the study of living systems. The assumption is made that understanding the details will enable us to comprehend the whole, and Broom's chapter three is a detailed analysis of this fallacy. Of course, investigating the details is not unimportant, and many valuable discoveries have been made through such investigations, but – to take genetics as an example – although sequencing the human genome is an amazing feat, it has thrown up a new set of problems as the realisation sinks in that we have very little idea as to how cells use cooperating networks of genes to produce their effects. Yet (with some distinguished exceptions) scientists remain unfailingly optimistic that the reductionist program will ultimately be successful in explaining everything.

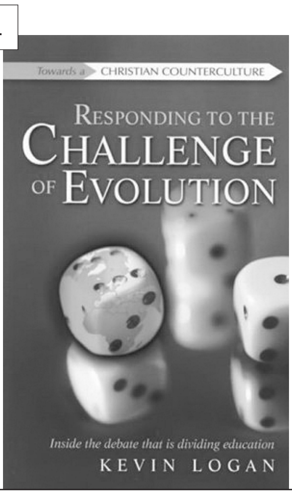
Broom's next three chapters constitute a compelling critique of the state of 'origin of life' (OOL) theories, from Miller's primordial soup through 'naked genes' to Kauffman's computer models of autocatalytic networks. The reader will gain a clear picture of just how desperate naturalistic science has become in its vain attempt to achieve anything remotely credible in this field. A rational person might wonder how it is that despite their resounding lack of success, naturalistic scientists still believe that life must have evolved somehow. The reason is clear: without the evolution of life in the first place, neo-Darwinism (as an all-embracing 'evolution explains everything' theory) cannot even get started. Broom turns his attention to this after a short excursion (in chapter seven) to deal with the conceptual flaws in the naturalistic refuge from the failure of OOL theories – chance and time.

His appraisal of the neo-Darwinian concept of natural selection demonstrates again and again how naturalistic science cannot help but speak in terms of purpose and intent, of goal-directed behaviour by living systems, while at the same time their worldview denies such possibilities. This critique is not new, of course – other creationist authors have pointed to this schizophrenic behaviour on the part of Darwinians – but Broom's illustrations are clear and well chosen. Like Behe in *Darwin's Black Box*, but without the detailed analysis of individual systems, he explains how molecular biology refuses to support the simplistic reductionism of Dawkins and his colleagues.

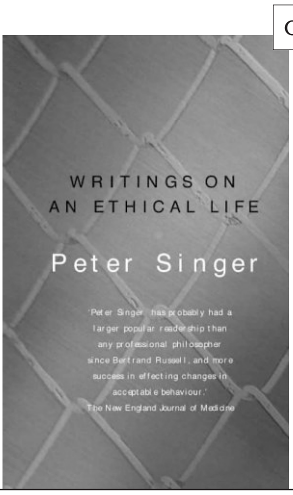
The author's main concern has been to point out the deficiencies of neo-Darwinism as an explanation for the design we see everywhere, and at all scales, in the natural world. However, in the final chapters an outline emerges of an alternative, more positive, stance. Broom presents several examples of purposeful behaviour in living systems, which he believes is evidence that they are *designed* to be complex biological machines, with an in-built purpose. Following the traces of this purpose he sees as a legitimate and rewarding scientific enterprise.

A few general points to finish: other ID-ers, such as Behe or Dembski, have been content to argue mainly for design, leaving the Designer's identity

02


Towards a CHRISTIAN COUNTERCULTURE
Responding to the
Challenge
of Evolution
Inside the debate that is dividing education
KEVIN LOGAN

03


WRITINGS ON
AN ETHICAL LIFE
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'Peter Singer has probably had a larger popular readership than any professional philosopher since Bertrand Russell, and more success in effecting changes in acceptable behaviour.'
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BOOK REVIEWS

indeterminate. While the peculiar constitutional circumstances of the United States is a partial explanation for this approach, I do wonder about the value of such a tactic, even in the USA; most Darwinists assume ID is a surrogate for a biblical creationist approach anyway. At any rate, Broom prefers to be explicitly theistic, especially in his last chapter and in the appendix, where he highlights the outlook of earlier generations of scientists who found no difficulty in discerning the traces of God's purpose in their exploration of the natural world.

The book is useful too in drawing attention to the prescience and clear-sightedness of Michael Polanyi, the British-Hungarian scientist and philosopher whose writings of the 1950s and 1960s have been somewhat neglected recently. (But not by everyone: I remember a talk by the late Francis Schaeffer that showed his appreciation for some of Polanyi's philosophical analysis.) Polanyi's study of the relationship between man and machines not only bears directly on the design issue, but is likely to become increasingly relevant as the claims of 'artificial intelligence' become yet more extravagant. His writings are not an easy read, but they certainly reward a patient study, and in bringing them to the fore again, Broom has pointed to a helpful resource.

The book is illustrated with a number of pictures and cartoons, and my only complaint would be that quite a few of both are of doubtful relevance. But that is probably a question of personal taste, and they do serve to break up the text nicely. Overall, although it treads some of the same ground as other ID writings, Broom's work has its own distinctive merits, which make it an ideal introduction to a more detailed consideration of intelligent design arguments.

Colin Reeves

Responding to the Challenge of Evolution 02

by Kevin Logan. Kingsway Publications, Eastbourne. 2002. 221pp.
ISBN 1-84291-110-4.

This is an unusual but helpful approach to the creation/evolution debate in which the author reviews the arguments from both sides, leaving the reader to make a decision. Generally he represents each position fairly, though he is a little out-of-date on creationist approaches to Neanderthal Man, the geological column, etc. Likewise, he was not aware of the work of Andrew Snelling *et al* on radiometric dating. He reports on the letter by leading scientists following the Gateshead controversy last year, but fails to report on the counter letter by another team of scientists supporting an open approach to the subject. Is there a misprint on page 190? The author refers to the gospel essentials and lists as the fourth point, 'a fall that wasn't'? Presumably this should be understood in conjunction with the previous bullet point, 'a beginning that was good' and so read as 'a fall that wasn't good'? In spite of these flaws (in my view), it is a useful book for anyone interested in the subject to read.

J H John Peet

Writings on an Ethical Life 03

by Peter Singer. Fourth Estate. 2002. ISBN 1-84115-551-9. £8.99 (pb).

Peter Singer has been described as "the most influential living philosopher"; his book *Animal Liberation* was a formative influence in the modern animal rights movement. His views also attract fierce controversy, and his appointment as Professor of Bioethics at Princeton University's Centre for Human Values in 1999 sparked a storm of protest. Many are shocked by his forthright defence of abortion, infanticide and euthanasia, and the assertion of the value of animal life as being equal to (and sometimes greater than) that of humans. This book is a collection of Singer's writings, which he has published in response to his critics. He fears that some protests stem from ignorance or misunderstanding of his views, and so this modest volume enables us to read key selections from his writings over the past 30 years to see his views properly argued in context. What we find is a man committed to the theory of evolution and working out the consequences of that theory for modern living. This book is an important contribution to our understanding of much ethical thought today, for Singer represents a multitude of modern thinkers who are working without reference to biblical revelation. When controversy surrounded his appointment at Princeton, a fellow scholar commented, “There’s nothing scary or unique in what Peter’s doing. It’s mainstream Anglo-American philosophy.”

Singer advocates utilitarian ethics – that is we are to follow the course of action which, on balance, furthers the interests of those affected. Put more simply, we are to minimise pain and suffering and maximise enjoyment and happiness wherever possible. This is presented as the absolute and universal moral principle – the golden rule from which all else flows. We are to do to others as we would have them do to us. However, we are not to limit this moral principle to human beings. Singer explicitly rejects the Christian belief that humans are of greater value than other animals. He does not believe that we have immortal souls, nor that we are made uniquely in the image of God. Therefore our principle of maximising enjoyment and minimising pain must be applied as much to a dog as to a child. Each has its own capacity to enjoy life; each has its own capacity for misery and pain. So we are to consider each according to its own capacities and the limits of its sensory experience. There is to be no favouring of human beings simply because we are human (to do so would be speciesism - as wicked as racism, or sexism). So we are led to some stark conclusions:

> “A chimpanzee, dog, or pig, for instance, will have a higher degree of self-awareness and a greater capacity for meaningful relations with others than a severely retarded infant or someone in a state of advanced senility. So if we base the right to life on these characteristics, we must grant these animals a right to life as good as, or better than, such retarded or senile humans.” (pp.44-45).

We are being presented, then, with an ethic in which the value of life depends on our capacities for sentience, self-consciousness, intelligent thought, and relationship with others. It is clear that some human lives in this system are considered to be much more valuable than others. Killing is wrong because, Singer argues, it frustrates the victim’s capacities of self-awareness, sense of the future, and capacity to relate to others. But as an embryo, or a newborn child, lack these capacities their life has no intrinsic value. Indeed, while we become members of the human species from the moment of conception, we do not become ‘persons’ except insofar as we demonstrate these capabilities; even the newborn is only a potential human being.

The consequences of Singer’s thought are terrifying. Large numbers of people falling short of ‘personhood’ become disposable according to his philosophy. As he says so frankly, “It would be allright to kill a sick, old person when that person has asked to be killed... and is making that decision for good reason...” (p.322). There seems to be so little comprehension that precisely when we are weak, sick, or old, our own perception of self-worth diminishes. To believe Singer’s philosophy is to surrender to the conclusion that I am worthless, that the family would be better off without me, that I am a drain on them and on society. And so another sub-person dies.

Where does this utilitarian scheme end? Who is the arbiter of human worth and personhood? Who have lives worth living, and who are merely members of the human species lower in the scheme of things than animals? It is small wonder that our modern culture is confused on this vital matter of personal value. There is the endless pursuit of health and beauty, of body size and shape, of money and fame to find significance in the world.

The Christian response is of course that every human being from conception has value and dignity because we are uniquely created in the image of God. Our personal worth does not depend on our intelligence, or self-consciousness, or gifts, or productivity, or value to human society, or skin colour, or nationality or culture. We have no right to pass judgment on others and declare them worthless when each one is valued by God. He loves us as we are – for He created us that way; and He loves us even in the face of our wilful rebellion against Him, even as we bear the scars of the curse and consequences of our sin. It is this intrinsic worth which is the basis of the sixth commandment, which applies whether we are an early embryo or an elderly invalid (cf.Ge.9:6).

Singer’s philosophy springs directly from his rejection of Christian teaching. In one chapter ‘In Place of the Old Ethic’ he actually tries to write a new set of ‘commandments’ on the ethics of life and death.

> “If you look at the book of Genesis, you see there the idea that humans are special, that God created humans in his own image and gave them dominion over the other animals. Since Darwin, at least, we’ve known that that’s factually false, and now we’ve got to draw the moral implications of understanding that it’s factually false.” (p.320).

To portray Singer as a monster would be wrong. There are many passages in this book which point to him being a caring and compassionate man. He makes a powerful case for the moral obligation of those living in prosperous countries to help the poor in the two-thirds world suffering from famine, disease, and natural disasters. When asked about particular cases in medical ethics he is inclined to be compassionate. But Singer has the courage and intellectual integrity to follow evolutionary ethics to their logical conclusion. Casting off the anchor of biblical revelation he charts the course of autonomous human reason - and we may well tremble to see the way he takes.

We need to read this book to be informed of the current thinking of our intellectual leaders, and to be reminded of the vital importance of the doctrine of Creation in upholding the values of human life and dignity.

Bill James

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ROBERT PROUDLOVE, BO'NESS, WEST LOTHIAN

I appreciated Sheena Tyler's review of *Creationist Diet* in *Origins* 34 with her thoughtful comments on the issues raised. As a result I hope to obtain a copy of the book.

However, it is important to note that, in relation to the use of growth hormones to increase yields, the author is dealing with the situation in the USA and not Britain, where such products are not, as yet, permitted. As a Christian journal, I hope that you will feel able to publish a clarification in the interests both of truth, and as a positive expression of support for the present situation in Britain which deserves to be known and vigorously supported lest it be lost.

REPLY BY SHEENA TYLER

Robert Proudlove is right in stressing that the use of bovine growth hormones is banned in Britain. However, the situation is not so clear-cut and simple. Firstly, there are violations of this ban, but I have only anecdotal evidence. I have been unsuccessful in tracking down the statistics of this, and indeed the extent to which it is policed. Secondly, growth hormones may be found in foodstuffs containing dairy products imported from the USA (e.g. in commercial brands of cakes and cookies). Thirdly, there is the associated issue of the misuse of antibiotics as growth promoters, which is a practice found in Britain, and indeed has recently been in the news, in which the Soil Association is claiming that the use of banned antibiotics for the fattening of livestock is increasing (*The Daily Telegraph*, 1st September 2003, p.6).

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